

Planning and Housing Policy Team
Regeneration and Planning
Lancaster City Council
PO Box 4
Town Hall
Dalton Square
Lancaster
LA1 1PJ



14 February 2019

Dear Sir / Madam,

Lancaster District Local Plan 2011-2031 Consultation on Additional Evidence and Information

Thank you for inviting Highways England to comment on the additional evidence and information that Lancaster City Council has published to support the submitted Local Plan.

As a statutory consultee in the planning system, Highways England has a regulatory duty to co-operate. Consequently, Highways England is obliged to give consideration to all proposals received and to provide appropriate, timely and substantive responses. Highways England's desire to be a proactive planning partner goes beyond this statutory role and follows the spirit of our Licence from the Secretary of State for Transport, which states that Highways England should: "*support local and national economic growth and regeneration*".

Highways England is charged with operating, managing capacity, maintaining and improving England's motorways and major A roads, which form the Strategic Road Network (SRN). **It is an ambition to ensure that major roads are more dependable, durable, and most importantly – safe.** Therefore, this letter contains our consideration of proposals within the Lancaster Local Plan Publication Development Plan Documents (DPDs) and associated transport evidence, particularly focussing on the potential for impact upon the safety and operation of the SRN within Lancaster, and the legal compliance and soundness of the documents.

The SRN in Lancaster comprises specifically of Junctions 33, 34 and 35 of the M6 motorway; a route of national significance that links the Midlands, North West England and Scotland.

Given our role and the context of our previous Local Plan consultation responses, this letter specifically considers the:

- Transport Assessment Part 1 (Initial Assessment) and Part 2 (Identification of Mitigation Measures) documents produced on behalf of the City Council by WYG Transport;
- Air Quality Position Statement;
- Planning Advisory Note on Low Emissions and Air Quality.

Please note that we have also provided detailed comments on both Parts of the Council's Local Plan Transport Assessment (TA) in a separate Technical Note that is appended to this letter.

Before moving on to our main comments, we feel it is important to restate the **background** to the Council's current consultation and its general contextual relevance. Highways England understands that:

- In accordance with regulation 22 of the Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended), Lancaster City Council submitted its Strategic Policies and Land Allocations DPD and Development Management DPD to the Secretary of State on the 15 May 2018 for independent examination. The appointed Planning Inspector is expected to list the matters and issues to be considered at the local hearing sessions to commence on 01 April 2019. These are the matters and issues which are considered fundamental to the soundness of the DPDs as submitted;
- Prior to Submission, the Council undertook several 6-week consultations to inform the preparation of the emerging Local Plan as follows: 'Strategic Options for Growth' in Summer 2014, 'People Homes and Jobs' in Autumn/Winter 2015 and the 'Draft Local Plan' in Winter/Spring 2017. This culminated with the consultation on the 'Local Plan Publication' in Winter/Spring 2018, which represented the version of the Plan that the Council wished to submit for examination and then adopt;
- The appointed Planning Inspector has already received a copy of Highways England's response to the Local Plan Publication consultation, alongside the submitted plan.

Highways England notes that the examination process starts on submission of the DPDs to the Secretary of State, and therefore the Inspector must consider the *soundness* of the DPDs as submitted. It is recommended in the Procedural Practice in the Examination of Local Plans (June 2016) that the Local Planning Authority (LPA) rigorously assess the plan before it is published for consultation under regulation 19 to ensure that it is a plan which they consider to be sound. The plan should focus relentlessly on the critical issues and strategies to address them, paying careful attention to deliverability and viability.

The Planning and Compulsory Purchase Act (2004) specifically provides that a LPA must not submit the plan unless it considers the document is ready for examination. The Inspector will take the published plan (and if relevant, the addendum submitted with the plan to address matters arising from the public consultation on the plan at regulation 19 stage) as the final word of the LPA on the plan. Therefore, there is a very strong expectation that further LPA-led changes to the plan will not be necessary and this is a key premise of delivering an efficient examination timetable.

Provision for changes after submission of the plan is to cater for the unexpected. It is not intended to allow the LPA to complete or finalise the preparation of the plan. Main modifications (MM) after submission will only be considered where they are necessary to make the plan sound and/or legally compliant and where the LPA has formally requested that such modifications be recommended by the Inspector. This also applies to any changes of approach to policy (including site allocation) instigated by the LPA.

Highways England Comments on Transport Assessment Part 1 (Initial Assessment) & Part 2 (Identification and Assessment of Mitigation Measures)

The Transport Assessment (TA) Part 1 and Part 2 acknowledges in the introductory text that there is a major limitation to the study, noting the absence of an up-to-date Strategic Transport Model (STM). A STM would enable the impact of potential major transport infrastructure schemes to be determined more accurately, considering potential reassignment of traffic around the highway network following scheme delivery, and in response to changing congestion patterns. Such proposed schemes are likely to have a major impact on highway network operation in Lancaster, including the SRN. Instead the TA states that it only provides a high-level generalised assessment of the potential impact of the emerging Local Plan allocations on the highway network. The TA also refers to individual site TAs being prepared for each development if and when they are brought forward by applicants. This obligation should not be seen as supporting a piecemeal approach as opposed to effectively planning for sustainable development.

Highways England was expecting the Local Plan to be supported by a comprehensive and transparent cumulative transport assessment, to be undertaken before the Examination in Public (EiP). Both a cumulative assessment and site-specific assessments are required to assist Highways England in forming a full understanding of the implications of growth in Lancaster on M6 Junctions 33, 34 and 35.

According to National Planning Practice Guidance (NPPG) an assessment of the transport implications should be undertaken at several stages in *preparing* the Local Plan. The last of these stages should highlight the scale of and priorities for investment requirements and support infrastructure spending plans. **It should be an iterative process that becomes more refined through the process itself; informing what is actually in the plan and shaping its development rather than being collected retrospectively.** The Local Plan Transport Assessment is key to assessing the quality and capacity of transport infrastructure and its ability to meet forecast demands leading to the identification of short, medium and long-term proposals across all modes. These outcomes can highlight the need to consider alternative allocations or mitigation measures to ensure the proposed land allocations are sustainable, viable and deliverable.

Notwithstanding the above, we have undertaken a technical review of the Transport Assessment (TA) and offer the following summary of our key findings:

- **Traffic Growth** – The methodology for deriving forecast year traffic flows results in higher background traffic growth in the ‘without’ Local Plan scenario than in the ‘with’ Local Plan scenario. It is suggested that a truer reflection of Local Plan impacts would be to remove the equivalent level of Local Plan development from the TEMPro database in both scenarios; this approach therefore allows the direct identification of infrastructure requirements to support the planned level of housing and employment development;
- **Trip Rates and Trip Generation** – These elements appear appropriate, subject to agreement from the highway authority, Lancashire County Council;
- **Trip Assignment** – Whilst sensitivity assessments could have been used to refine the adopted fixed assignment methodology, a STM would have provided a more robust assessment by considering alternative assignments due to congestion and the proposed

major schemes (i.e. Bus Rapid Transit, dedicated cycle route between South Lancaster and the city centre and the reconfiguration of M6 Junction 33);

- **Junction Modelling** – There are a number of modelling concerns across all the models presented. In selected cases, the correction of errors has identified requirements to consider further mitigation. Changes to the traffic growth methodology may also affect the model results and therefore we are unable to come to a sound conclusion on the likely level of impact of the Local Plan based on the evidence provided;
- **Mitigation Measures** – Whilst identified mitigation measures may require review following update to the junction models and traffic flows, concerns have been highlighted in relation to the mitigation options proposed for A6 Main Road/ Stoney Lane/ Salford Road (Junction 2), and Caton Road/ M6 Junction 34 (Junction 10) and A683/ M6 Junction 34 (Junction 29). We would suggest that improvement options for the A6 Main Road/ Stoney Lane/ Salford Road (Junction 2) have deliverability and operational issues that could limit the degree of improvement possible, and therefore have concerns over the scope for mitigation to accommodate future Local Plan growth at this location, where queues currently extend back a significant distance along the A6. We understand that Lancashire County Council (with the support of the City Council) are currently preparing a Housing Infrastructure Fund (HIF) bid for the reconfiguration of M6 Junction 33. We would suggest that the City Council's option to relieve congestion at the A6 Main Road / Stoney Lane / Salford Road crossroads (Junction 2) may negatively impact upon any reconfigured motorway junction. In addition, the A683 / M6 Junction 34 does not prevent queues extending onto the M6 mainline, and the scheme has also not been included within the Infrastructure Delivery Schedule. Whilst further improvements have been alluded to within the Transport Assessment (including widening beneath the M6), no further proposals are committed to. Highways England consider the existing mitigation measures to be inadequate, and further improvements should be considered.

Furthermore, there are some discrepancies between the findings of the TA and the information set out within the Infrastructure Delivery Schedule. The Infrastructure Delivery Schedule includes several major infrastructure schemes that are stated as being critical and having delivery timescales in the early years of the plan (2020 onwards), but are not accounted for within the TA (or are currently properly evidenced or funded):

- Reconfiguration of Junction 33 of the M6 – 2020 to 2025;
- Highway Improvements into South Lancaster – 2020 to 2025;
- Lancaster South A6 Corridor Improvements – 2020 to 2035;
- Re-modelling of Lancaster City Centre Gyratory – 2020 and 2025;
- Bus Rapid Transit – 2020 to 2035.

The nature of the above schemes would have a major impact on the operation of the highway network across Lancaster and therefore should be accounted for in the Local Plan evidence. It is understood that the schemes which form part of the Lancashire Housing Infrastructure Fund (HIF) bid would also need to be delivered by 2023 (we are not aware of any robust and complete transport evidence to support these aspirations, and linked to Local Plan housing growth).

However, the TA maintains that the identified infrastructure would not need to be completed prior to the 2023 assessment year. As such the TA does not assess the impacts of this major

infrastructure in either the 2023 or 2033 assessment years, and contends that the 2023 assessment is representative of predicted highway conditions at this time.

It is suggested in the TA that the inclusion of major infrastructure would have a globally positive impact on the highway network. **We believe it is not possible to make this assertion without robust and appropriate supporting evidence, as whilst the schemes are likely to have positive impacts for the City of Lancaster they are also likely to change how vehicles use the current highway network and may result in more traffic using specific junctions or sections of road (including the SRN).** We have expressed these concerns throughout the Local Plan consultation process.

Highways England previously advised that a STM would provide a more robust understanding of the implications/impacts of these schemes, phased as necessary across the assessment years. The TA has been based upon a fixed assignment approach with no account of planned network changes or changes in journey time. **This substantial limitation casts doubt on the findings of the TA and the level of impact for the SRN.**

Effective and on-going joint working between strategic plan making authorities and relevant bodies is integral to the production of a positively prepared and justified strategy. Whilst Lancaster City Council has engaged with Highways England during this process, **we do not consider that our comments relating to the lack of a robust transport evidence base have been adequately addressed.** Furthermore, based on our review of the submitted TA we have concerns over the suitability of some of the proposed mitigation measures, and the residual cumulative impacts for the SRN.

Highways England Comments on Air Quality Position Statement

This statement has been prepared to outline the council's current approach and to summarise the progress that has been made to date in addressing the issue of air quality, as part of the Local Plan preparation. It states that the process is ongoing, and the position will evolve as further work is carried out over the coming months.

The statement sets out the current (baseline) air quality conditions, based on monitoring undertaken by the Council. It then provides an overview of how the four main strategic site allocations within the submitted Local Plan will seek to provide for and promote sustainable transport to address their potential impact on Air Quality Management Areas (AQMAs). An evaluation of potential mitigation options for the future is provided along with a qualitative analysis of the potential impacts of traffic generation and associated mitigation. It is expected that following the conclusion of detailed transport studies, air quality modelling will be undertaken to quantify these impacts.

It is suggested that monitoring indicates compliance with air quality objectives in the Carnforth and Galgate AQMAs for the first time since declaration, and this is most likely due to traffic changes arising from the opening of the Bay Gateway in October 2016. **However, traffic count data will be required to confirm that this is attributable to the opening of the new road.** Lancaster AQMA has consistently recorded levels over 60 µg/m³ for the last 7 years, and this is suggestive of a risk of an exceedance of the 1-hour mean nitrogen dioxide objective at this location.

In terms of *future* air quality and mitigation, it is anticipated that full quantification of the air quality impacts up to 2031 will be completed in 2019. Although it is expected that air quality will

improve as newer vehicles enter the fleet with higher Euro standards, it is acknowledged that there is the potential for air quality to worsen where there are increases in traffic on certain routes, particularly in the short term. It also states that care must be taken to ensure problems are not created by building too close to existing busy roads such as the M6.

The statement refers to the Highways and Transport Masterplan as setting out the council's vision for travel and transport to 2031. To achieve the vision, Caton Road needs to become the principal Gateway into the city centre for traffic from the M6. A Park and Ride/Cycle facility at Junction 34 will intercept traffic from the motorway, and the Bay Gateway will mean HGVs no longer need to travel through the city or along Caton Road, reducing congestion and improving air quality. It goes on to state that a Movement Strategy for Heavy Goods Vehicles is being prepared, the Lancaster Reach Bus Rapid Transit concept will be developed, and changes to the city centre gyratory system and support for walking and cycling will all be brought together in a Lancaster City Movement Study. The study will also consider air quality as a complementary measure for addressing congestion in the city centre. In addition, it is also stated that the reconfiguration of M6 Junction 33 is also required to support significant growth potential in South Lancaster, providing access to the motorway network without having to travel through either the city centre or Galgate. It is noted that this proposal does not feature as part of the submitted Local Plan Transport Assessment. Finally, to complement proposals for better public transport and cycling/multiuser networks, the aim is for Lancaster to become an exemplar of the use of Ultra-Low Emission Vehicles (ULEVs).

The Low Emissions and Air Quality Planning Advisory Note is expected to be a useful mechanism to ensure the impacts of cumulative developments do not become significant (i.e. by implementing general emission reduction measures to reduce the risk that many insignificant individual schemes contribute to a 'creeping baseline').

In the concluding remarks, the statement suggests that further technical work to support the Local Plan will identify where the air quality impacts are likely to be, the impact of the mitigation outlined, and the likely magnitude (positive and negative) of these impacts.

Highways England considers that this position statement should have been prepared earlier in the Local Plan process to inform the development of policies and allocations. This can highlight the need to consider alternative allocations or mitigation measures to ensure the proposed land allocations are sustainable, viable and deliverable. **The transport studies should also have been developed alongside the plan in a coordinated way to demonstrate that the measures proposed in the submitted Local Plan will provide the necessary mitigation to offset the impacts of proposed growth on air quality, specifically in relation to air quality levels associated with the additional trips on the transport network.**

Highways England Comments on Planning Advisory Note on Low Emissions and Air Quality

This Planning Advisory Note (PAN) encourages developers to support action through the planning system to improve air quality and lower transport emissions by providing guidelines for treatment of development sites through a planning appraisal. It supports the implementation and preparation of draft Local Plan policy DM28 by laying out the processes for assessing and mitigating air quality impacts of new development, including provisions for ensuring that users are not significantly adversely affected by air pollution.

The PAN explains the following:

- How to classify a development site in order to streamline its passage through the planning system.
- What assessment and mitigation needs to be considered for a given type of site;
- What submissions a developer needs to make and how these will be considered by the local planning authority.

Highways England considers that this informal guidance provides clarity to developers with regards to what information is expected to accompany a planning application in terms of demonstrating that any air quality impact can be appropriately mitigated. Any proposals that may have an impact on the SRN should also be discussed with Highways England at the earliest opportunity.

Conclusion

The Localism Act 2011, placed the responsibility of 'Duty to Cooperate' on local authorities, to ensure that any local or cross-boundary impacts have been fully considered and addressed appropriately in preparing the Local Plan. The local authority must demonstrate that they have discussed such matters with the relevant bodies, including Highways England.

Highways England note that the Council submitted the Local Plan to the Secretary of State on the 15 May 2018 for independent examination. The examination process starts on submission of the DPDs to the Secretary of State, and therefore the Inspector must consider the soundness of the DPDs as submitted. We believe the appointed Inspector is shortly due to issue a list of the main matters and issues to be discussed at the local hearing sessions that are considered to be fundamental to the soundness of the DPDs as submitted.

It is recommended in the Procedural Practice in the Examination of Local Plans (June 2016) that the LPA rigorously assess the plan before it is published for consultation under regulation 19 to ensure that it is a plan which they consider to be sound. The plan should focus relentlessly on the critical issues and strategies to address them, paying careful attention to deliverability and viability.

The Planning and Compulsory Purchase Act (2004) specifically provides that a LPA must not submit the plan unless it considers the document is ready for examination. The Inspector will take the published plan (and if relevant, the addendum submitted with the plan to address matters arising from the public consultation on the plan at regulation 19 stage) as the final word of the LPA on the plan. Therefore, there is a very strong expectation that further LPA-led changes to the plan will not be necessary.

According to NPPG an assessment of the transport implications should be undertaken at several stages in preparing the Local Plan. It should be an iterative process that becomes more refined through the process itself and ultimately shaping its development rather than this being collected retrospectively, and then trying to retrofit it to the development strategy.

We do not consider that the TA provides a robust transport evidence base, and have concerns over the validity of the conclusions, along with the scope and suitability of the identified mitigation affecting the SRN. We therefore request that the findings of the Transport Assessment are reviewed, utilising a STM, and that mitigation requirements for the SRN are

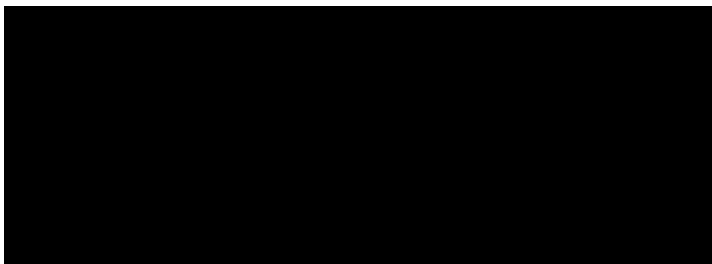
agreed with Highways England to ensure the continued safe and efficient operation of the SRN in Lancaster; something which avoids local trips being displaced onto the SRN.

The TA does not consider planned major transport infrastructure and the findings suggest that some major transport infrastructure deemed as 'critical' to the delivery of the Local Plan within the supporting Infrastructure Delivery Schedule, is not required. In addition, the Air Quality Position Statement acknowledges that more work is required to fully understand where the impacts of proposed growth are likely to be and if the proposed mitigation will provide the necessary measures to offset this impact. We would welcome a clearer understanding of what development can take place using existing transport capacity and at what time interventions are required, and how they will be funded and delivered.

We would also welcome continued dialogue with Lancaster City Council to ensure that the transport impacts of strategic areas for growth are appropriately assessed and considered in respect of the SRN. We support the inclusion of well-founded, sustainable transport schemes in the Local Plan, and would welcome the opportunity to work collaboratively with the Council to understand the impact of both the proposed highway and public transport schemes on the future safe operation of the SRN, and their ability to support planned growth in the area to 2031 and beyond.

We hope that you find our letter useful. If you would like to discuss anything about this consultation response, please contact me.

Yours faithfully,



Lancaster District Local Plan 2011-2031 Consultation on Additional Evidence and Information

Highways England Technical Note on Local Plan Transport Assessment Part 1 (Initial Assessment) and Part 2 (Identification and Assessment of Mitigation Measures)

1. Introduction

A Local Plan Transport Assessment (TA) has been prepared by WYG Transport (WYG) on behalf of Lancaster City Council to identify the highway impacts of the Plan across Lancaster, including the impacts on the Strategic Road Network (SRN). This TA consists of two parts:

- Part 1 (Initial Assessment)
- Part 2 (Identification and Assessment of Mitigation Measures)

This Technical Note contains Highways England's detailed technical response to the TA that has been produced by the City Council in support of its Local Plan following submission of the Plan for examination.

Highways England has previously provided commentary on an earlier draft version of the TA (Part 1), to which WYG have responded on the 1st August 2018, and which have informed our comments here. This Technical Note focusses on the assessment of impact for the SRN and adjacent junctions, and is limited to the following locations:

Table 1 - Junctions for Review

Junction Reference	Location	Junction Type	Modelling Software
1	A6/ Preston Road	Roundabout	ARCADY
2	A6 Main Road/ Stoney Lane/ Salford Road	Signalised	LinSig
10	Caton Road/ M6 Junction 34	Signalised	TRANSYT*
17	Kellet Road/ Back Lane	Priority	PICADY
18	Kellet Road/ A601M	Priority	PICADY
19	A6/ A601/ Pine Lakes	Roundabout	ARCADY
27	Shefferlands (A683/ M6 on slip)	Roundabout	ARCADY
29	A683/ M6 Junction 34	Signalised	TRANSYT*
30	M6 Junction 35	Roundabout	ARCADY

* Junction references 10 and 29 have been modelled together in TRANSYT to better reflect interaction between the junctions

1.1 Assessment Limitations

The work has been undertaken in the absence of a strategic traffic model, which has prevented assessment of the reassignment impacts of proposed major infrastructure. The following major

infrastructure schemes and delivery timeframes are detailed within the Local Plan Infrastructure Delivery Schedule:

- Reconfiguration of Junction 33 of the M6 – Delivered in early phases of development: 2020 to 2025;
- Highway Improvements into South Lancaster – Delivered in early phases of development: 2020 to 2025;
- Lancaster South A6 Corridor Improvements – Delivery throughout the developments: 2020 to 2035;
- Re-modelling of Lancaster City Centre Gyratory — Delivered between 2020 and 2025;
- Bus Rapid Transit — Delivery throughout the developments: 2020 to 2035.

Whilst the Infrastructure Delivery Schedule indicates delivery of major infrastructure schemes in the early years of the Plan, the TA suggests that delivery would not be completed prior to 2023. As such WYG contend that the 2023 assessment undertaken in the TA is representative of predicted highway conditions at that point in time.

It is understood that Lancashire County Council (backed by Lancaster City Council) are currently preparing a Housing Infrastructure Fund (HIF) bid for the reconfiguration of M6 Junction 33 and Bus Rapid Transit system proposals (we are not aware of any robust and complete transport evidence to support these aspirations, and linked to Local Plan housing growth). It is also understood that the schemes would need to be delivered by 2023. **As a consequence, this would appear to undermine the statement that the 2023 assessment scenario is representative of future conditions.**

We believe that the nature of the above schemes would have a major impact on the operation of the road network across Lancaster (either in 2023 or 2033) and therefore should be accounted for in the Local Plan evidence. It is suggested in the TA that the inclusion of major infrastructure would have a globally positive impact on the highway network. **We believe it is not possible to make this assertion without supporting evidence, as whilst the schemes are likely to have positive impacts for the City of Lancaster they are also likely to change how vehicles use the current road network and may result in more traffic using specific junctions or sections of road (including the SRN).**

Highways England previously advised Lancaster City Council and Lancashire County Council that a strategic traffic model should have been used to understand the implication of major infrastructure schemes, phased as necessary across the assessment years. The TA has been based upon a fixed assignment approach with no account of planned network changes or changes in journey time. We remain of the view that the reassignment impacts of proposed major infrastructure should have been accounted for in the assessment approach.

Whilst this Technical Note provides comment on the methods and findings of the Lancaster Local Plan Transport Assessment as presented, we believe that the absence of a strategic modelling tool is a significant limitation to the work, and one which may undermine the findings and recommendations of the TA.

2. Traffic Data

2.1 Survey Data

Turning count data was collected at each of the identified junctions on either Tuesday 28th November 2017, Tuesday 8th May 2018 or Tuesday 16th October 2018.

It is unclear which PCU conversion factors have been used to derive base year flows. According to the latest WebTAG guidance (Unit M3.1), the following PCU conversion factor should be used:

- Car – 1.0;
- LGV – 1.0;
- Bus – 2.0;
- OGV1 – 2.0; and
- OGV2 – 2.0.

As there is no reference to motorcycles or pedal cycles in the WebTAG guidance, 0.4 and 0.2 respectively are deemed suitable conversion factors in line with IHT's Transport in the Urban Environment.

2.2 Journey Time Data

The TA includes a review of existing highway conditions with analysis of Trafficmaster journey time data to identify network 'hot-spots'. The adopted Trafficmaster data covers weekdays (excluding Fridays and school holidays) during November and December 2017. WebTAG Unit M1.2 guidance advises that traffic surveys should only be undertaken in neutral months, and this would therefore advise against the inclusion of data for December.

Trafficmaster data covers morning and evening peak hours of 08:00-09:00 and 17:00-18:00 respectively. The 2017 Trafficmaster data reflects the opening of the Heysham Link Road (HLR) in October 2016, unlike pre HLR data used in early draft versions of the Part 1 TA.

It is noted that the adopted periods of analysis (08:00-09:00 and 17:00-18:00) do not match the observed peak hours for many areas of the network. Table 2 presents the surveyed morning and evening peak hours for each defined area. The A6 (S) Corridor includes Junction 33 of the M6, whilst the Caton Road Corridor includes Junction 34.

Table 2 – Surveyed Morning and Evening Peak Hours

Area	Morning Peak	Evening Peak
A6 (S) Corridor	07:30-08:30	16:30-17:30
Lancaster City Centre	08:00-09:00	16:15-17:15
Caton Road Corridor	07:45-08:45	16:30-17:30
A683 Corridor	07:45-08:45	16:30-17:30
A589 Corridor	08:15-09:15	16:30-17:30
Heysham	07:45-08:45	16:30-17:30
Carnforth	08:00-09:00	16:00-17:00
Morecambe	08:15-09:15	16:30-17:30

Whilst the 08:00-09:00 Trafficmaster time period used in the TA is a reasonable match for peak flows during the morning period, the observed peak hour during the evening period is at least 30 minutes earlier than the adopted Trafficmaster data.

To supplement Trafficmaster data, the TA also presents Google Traffic screenshots. As with the first draft of the TA it remains unclear which time periods have been used to display the Google Traffic plots presented in the TA.

Nevertheless, whilst we have reservations over aspects of the journey time data analysis and identification of network 'hot-spots', it is accepted that junctions relevant to the SRN have been included for further analysis as part of the TA, regardless of the finding of the 'hot-spot' analysis.

2.3 Traffic Growth

Traffic growth has been applied to the surveyed traffic flows to derive 2023 and 2033 forecast year flows for assessment. Traffic growth has been calculated using NTM via TEMPro and has been adjusted using the alternative assumptions within TEMPro to account for known committed developments and Local Plan growth. We agree that the use of alternative assumptions in TEMPro is suitable to prevent double counting of future traffic growth.

The method employed in the TA has applied alternative assumptions to both the 'with' and 'without' Local Plan scenarios. The 'with' Local Plan scenario removes committed development and the equivalent level of Local Plan development from the TEMPro database, whilst the 'without' Local Plan removes only committed development. The adopted method therefore results in higher background traffic growth in the 'without' Local Plan scenario than in the 'with' Local Plan scenario, and the scenarios do not provide a true comparison of the impacts of planned growth. It is suggested that a truer reflection of Local Plan impacts would be to remove the equivalent level of Local Plan development from the TEMPro database in both scenarios; this approach therefore allows the direct identification of infrastructure requirements to support the planned level of housing and employment development.

2.4 Trip Rates and Trip Generation

The trip rates and trip generation estimates presented in the TA are considered reasonable. It is agreed that individual Transport Assessments for future Local Plan development sites will need to refine and agree trip rates with Lancashire County Council, and Highways England as appropriate.

2.5 Trip Assignment

As previously noted, a significant limitation of the submitted assessment work is its application of a fixed assignment. Given the promotion of major network changes, with likely knock-on impacts on travel behaviour, it is considered that the fixed assignment approach cannot accurately forecast potential changes in future travel demands.

Whilst the adopted method uses observed journey time data to assign traffic, alternative sensitivity assessments could have been applied to scenario test the journey time impacts of proposed major infrastructure. Such assessments could have provided a measure of comfort in the absence of a strategic modelling tool.

2.6 TD22/06 Merge/ Diverge Assessments

The TA includes merge and diverge assessments for Junctions 33, 34 and 35 of the M6, drawing on traffic flows presented in Table 7.6 and 7.7 of the TA. Whilst the adopted merge/diverge flows appear suitable, the mainline flows used in the calculations are often an overestimate, being based on the mainline flow before the junction.

WYG state that the existing merge/ diverge layouts will accommodate future traffic flows, and based on our own review of the traffic flow assumptions for the 2033 DS scenarios, and guidance set out in TD22/06 and IAN 149/17, this statement appears to be correct.

3. Junction Modelling

This section provides comments in respect of traffic modelling for key junctions. Little evidence of base model validation has been provided, and we cannot be sure that input values (e.g. signal information and geometric measurements) and operational performance are a realistic representation of existing conditions. Comments in respect of model set-up are provided in the absence of detailed geometric take-off drawings. In addition, whilst raw traffic count data has been provided, no detail of PCU conversions has been included, and it has not therefore been possible to check the build-up of assessment flows.

Highways England previously commented that queue results in LinSig should be adjusted if a lane is over capacity. It is accepted that there is no official guidance on this matter; however, it is important to be aware that the modelled queue is likely to be underestimated if the DoS exceeds 100%.

Highways England remains of the opinion that an RFC of 1.00 indicates the arm is operating at theoretical capacity and an RFC of under 0.85 suggests the arm is within practical capacity. WYG have continued to regard an RFC of 1.00 as operating within ultimate capacity. This is not a robust approach and may affect the identification of required mitigation. Similarly, Junctions 17 and 18 should be assessed with a capacity threshold of 0.75 due to the speed of the road, as stated in the Junctions 9 User Guide.

3.1 Junction 1 – A6/ Preston Road

3.1.1 Base Modelling Review

The roundabout junction has been modelled using the ARCADY module in Junctions 9. It is suggested that the approach road half-widths appear too wide on all arms, particularly the A6 northern and southern arms, where the measurements include the two-lane flare section. The correct width should be measured upstream of any flare, as stated in the Junctions 9 User Guide. The entry radii on the northern and eastern arms also appears to be too small.

The model does not include intercept adjustments. An intercept adjustment may need to be applied to the northern and southern arms to account for unequal lane usage. It is suggested that the eastern arm could also be tested with an intercept, although the lane usage is much more equal on this arm.

3.1.2 Results

The modelling results indicate that the roundabout is forecast to operate within capacity in all scenarios. However, if the approach road half widths are corrected on the northern and southern arms to exclude the flare, the northern arm will operate at 0.90 RFC in the 2023 DS PM and 1.09 RFC in the 2033 DS PM and therefore improvement options may need to be considered.

3.2 Junction 2 – A6 Main Road/ Stoney Lane/ Salford Road

3.2.1 Base Modelling Review

This junction has been modelled in LinSig. Traffic flow data has been provided for two survey dates in May and October 2018 and the modelling has been undertaken for both sets of flows.

The give way parameters entered in the model generally appear correct, however the coefficient on the southern arm is set to 1.00 rather than 1.09 and should be adjusted. This has been tested and a coefficient of 1.09 slightly increases the DoS, queue and delay on the southern arm.

We have not had sight of the signal specification for the junction and are unable to confirm the signing timing information adopted. Nevertheless, the data entered in the model appears reasonable. Different cycle times have been used for the morning and evening peaks, and signal timings in the future year scenarios have been optimised to achieve the best results.

3.2.2 Results

Although WYG state that the model does not represent observed conditions, the junction is shown to be operating above capacity on both survey days in the morning and evening peaks. Furthermore, the junction is forecast to operate significantly over capacity in the DS 2033 scenario, with DoS values exceeding 200%.

3.2.3 Mitigation

Two improvement options have been proposed, both of which seek to address blocking issues associated with right-turning vehicles from the A6 south to Stoney Lane.

Improvement option A provides short and narrow right-turn lanes on the A6 approaches and repositions the stop line of the A6 (S) approach slightly south to accommodate the existing turning radii. Inspection of the PDF provided in the TA suggests that the right-turn lane on the southern arm has a width of only 2 metres, whilst the right-turn lane on the northern arm is 2.5 metres. Vehicle tracking shows that two vehicles cannot sit side-by-side due to the narrow lanes and turning radii. The alignment of the lanes through the junction also appears unsuitable and may cause safety concerns. LinSig modelling of the improvement options appears reasonable, with suitably low saturation flows for the narrow right-turn lanes.

Improvement option B involves the provision of storage lanes in the centre of the junction for right-turning traffic from the northern and southern arms. As with Option A, it is suggested there are likely to be safety concerns in relation to the narrow storage widths in the centre of the junction. Both options also require a reduction in the size of parking area on the south-eastern corner of the junction.

Both options use a negative bonus green of -4 seconds on the northbound and southbound straight-ahead lanes. No clarification is provided to explain why this has been included and how the bonus green time has been calculated.

3.2.4 Mitigation Results

Both options continue to operate over capacity in the DM 2033 and DS 2023 scenarios, but are improved relative to the base model. However, as this junction could not be validated against observed conditions, the results should be treated with caution. Despite the improvement, queues on the southern arm are still forecast to exceed 40 PCUs in the DS 2033 AM scenario, and the potential interaction between ahead and right-turning vehicles could still limit any potential capacity gains delivered by either scheme option.

We would suggest there may be safety concerns with both options presented, and therefore have reservations that appropriate mitigation can be delivered to prevent queues from extending back to the A6/ Preston Road junction, and M6 Junction 33.

3.3 Junctions 10 & 29 – Caton Road/ M6 Junction 34 & A683/ M6 Junction 34

3.3.1 Base Modelling Review

This junction has been modelled in TRANSYT, which appears to give a better representation of network operation and blocking back between the junctions, than the previously issued LinSig model of the junction.

A 120 second cycle time has been used across the junctions, and the model has been optimised for offsets and green splits. It is unclear whether this information is based on observed timings of the morning and evening peak, but it is suggested that the same information should be carried through to the future year scenarios. Phase data, stages and intergreens have been verified against the signal specification for Caton Road/ M6 Junction 34 and have been modelled appropriately. The signal specification has not been provided for the A683/ M6 Junction 34, however the modelled inputs seem reasonable.

Some speeds on the connectors are set to 20mph and others are 30mph. Justification of the speeds used should be provided. Links lengths have been auto-calculated using background mapping, but this does not consider the distance through the junction. For example, the distance between link 21 and the upstream stop line is not accounted for. This may affect cruise times and offsets between the two junctions. Saturation flows have also been auto-calculated, however the 'treat as nearside' function has not been used which will result in an overestimation of the saturation flow in some cases.

Links 7, 10 and 11 on the western arm of the Caton Road/ M6 Junction 34 junction should also be modelled as flares due to the potential for blocking back. The network default Platoon Dispersion Model (PDM) will not capture the blocking back, therefore the flare traffic model is required. Likewise, the eastbound link between the two junctions should be modelled as the Cell Transition Model (CTM) to reflect any blocking queues.

Maximum queue storages have been used on some flares but should be on all. This should be amended to give more accurate geometrical inputs into the model.

3.2.2 Results

Caton Road/ M6 Junction 34 becomes over capacity in the DS 2023 AM scenario and the A683/ M6 Junction 34 becomes over capacity in the DM 2023 PM scenario.

3.3.3 Mitigation

The model shows that in the future year scenarios there is significant queuing on the A683/ M6 Junction 34 southern arm, which blocks back through the M6 southbound off-slip and onto the M6 mainline.

Proposed mitigation seeks to provide a second left-turn lane from the M6 southbound off slip which continues westwards towards the motorway bridge and then merges into a single lane. To achieve this, Option A retains the existing highway boundaries, but the central island width is reduced. In Option B, the widening is achieved by extending the carriageway southwards.

3.3.4 Mitigation Results

Modelling of the mitigation proposals indicates that queues will continue to block back onto the M6 mainline. The CTM shows that the issue stems from the link under the motorway bridge, upstream of the flare. This then blocks back and intensifies the issue on the off-slip. The proposals do not therefore suitably mitigate the impact of the LP at this junction, and alternative proposals should be considered.

WYG state in the TA that an analysis has been undertaken which shows that providing a fourth lane underneath the motorway bridge would allow the junction to operate within capacity with the LP in place. This analysis should be provided and should be considered as a mitigation option.

Furthermore, it is noted that mitigation proposals for M6 Junction 34 are not included within the Infrastructure Delivery Schedule. It would be expected that once a suitable scheme is identified at the junction that it be included within the Infrastructure Delivery Schedule.

3.4 Junction 17 – Kellet Road/ Back Lane

3.4.1 Base Modelling Review

This junction has been modelled using the PICADY module in Junctions 9. Aside from the general comments made in the overview of Section 3, there were no additional issues identified with the development of this model.

3.4.2 Results

The model results predict that the minor arm will operate over capacity in the DS 2033 AM scenario and suffer from long delays.

3.4.3 Mitigation

An identified improvement option is within the existing highway boundary and involves extending the existing flare on Back Lane to provide 25 metres of two full lanes. The mitigation option has been modelled in Junctions 9. Detailed geometric take-offs are not provided, but geometries have been reviewed using Google Earth and appear suitable.

3.4.4 Mitigation Results

The identified improvement option reduces the highest RFC to 0.97 in the DS 2033 AM scenario, which mitigates the impact of the LP and decreases the RFC below theoretical capacity. However, it should be noted that the practical capacity of this junction is 0.75 due to the speed of the road and therefore alternative options may need to be considered.

3.5 Junction 18 – Kellet Road/ A601M

3.5.1 Base Modelling Review

This junction has been modelled using the PICADY module in Junctions 9. Aside from the general comments made in the overview of Section 3, there were no additional issues identified with the development of this model.

3.5.2 Results

WYG has identified that the junction is approaching capacity in the DS 2023, DM 2033 and DS 2033 scenarios based on an RFC of 0.85 as practical capacity. Due to the speed of the road,

the User Guide states 0.75 should be used as practical capacity and therefore the DM 2023 scenario should be considered above practical capacity.

3.5.3 Mitigation

Two mitigation options have been proposed at this junction. Option A can be constructed within existing highway boundaries and involves changing the priority of the junction so that the Kellet Road (E) arm becomes the minor road and gives-way to traffic travelling between the A601(M) and Kellet Road (W). The option has been modelled in Junctions 9 and in the absence of detailed geometric take-off drawings the adopted geometries appear suitable.

Option B involves converting the junction from priority-control to signal-control. It is unclear whether the option requires land outside the highway boundary. Option B also includes a pedestrian phase on the A601(M). This option has been modelled in LinSig.

It was noticed that the DS 2033 PM scenario was using the DS 2033 AM flow group. Nevertheless, when this was amended the junction operated within capacity causing no concern. The TA should be updated with the correct results.

The flare on Kellet Road (E) has been modelled as a short lane for right-turners. A length of 1 PCU has been used for this flare. Reference to the PDF provided in the TA suggests the flare is much longer than is. Additionally, the storage in front of the stop line has been entered as 2 PCU. Again, the PDF suggests that more than 2 PCUs could be accommodated in front of the stop line.

Saturation flows have been calculated from within LinSig, which is a reasonable approach. However, the 'treat as nearside' option has been used for all lanes. This should be adjusted to reflect the junction design on Kellet Road.

3.5.4 Mitigation Results

The results show that the junction operates well within capacity for Option A. The highest reported RFC for this option is 0.51 in the DS 2033 AM scenario. The results from Option B report a worst case of 75.8% DoS in the DS 2033 AM scenarios. The results could be further improved by optimising the cycle time.

3.6 Junction 19 – A6/ A601/ Pine Lake

3.6.1 Base Modelling Review

This roundabout has been modelled using the ARCADY module in Junctions 9.

It is considered that the effective flare length on A6 (S) should be longer than the 9.2 metres entered in the model. The entry radius on the A6 (N) also appears to be too large. Additional measurements based on CAD file information could provide verification on geometry.

The model does not include intercept adjustments. An intercept adjustment may need to be applied to the A6 (N), A6 (S) and A601 (M) to account for unequal lane usage. The Pine Lake access could also be tested with an intercept, although the lane usage is much more equal on this arm and traffic flows are low. This should be explored through validation of the base model.

3.6.2 Results

The roundabout is forecast to operate within capacity in all scenarios, although this should be reviewed with the findings of any intercept adjustments.

3.7 Junction 27 – Shefferlands (A683/ M6 on slip)

3.7.1 Base Modelling Review

This roundabout has been modelled using the ARCADY module in Junctions 9.

It is considered that the approach road half-width on the eastern arm is too wide and should be measured upstream of the flare. On the western arm, the width of 8.10 metres appears to be too wide and should be reviewed. Additional measurements based on CAD file information could provide verification on geometry.

The model includes a significant amount of traffic using the roundabout to travel from the western arm to the northern, and from the southern arm to the western arm. However, free-flow links are provided for these movements and therefore flows should be zero or very low.

The model does not include intercept adjustments. An intercept adjustment may need to be applied to the northern, eastern and southern arms to account for the unequal lane usage. This should be explored through validation of the base model.

3.7.2 Results

The roundabout is forecast to operate within capacity in all scenarios. If the approach road half-width geometries are amended, the A683 Bay Gateway western arm operates over practical capacity in the DS 2033 AM scenario, with an RFC of 0.9. Mitigation options may therefore need to be considered.

3.8 Junction 30 – M6 Junction 35

3.8.1 Base Modelling Review

This junction has been modelled as a large roundabout using the ARCADY module in Junctions 9.

The approach road half-widths on the M6 northbound off-slip and the M601 (W) appear to be too large. The approach road half-width of the A601 (E) is incorrect as the measurement should be taken upstream of the flare. It is also considered that the conflict angle of 2 degrees on the M6 southbound off-slip seems low and should be reviewed. Additional measurements based on CAD file information could provide verification on geometry.

Direct intercept adjustments have been applied to all arms except the M6 southbound off-slip. Calculations should be provided to verify the adjustments and to clarify why an intercept adjustment has not been applied to the northern arm.

3.8.2 Results

The roundabout is forecast to operate within capacity in all scenarios. When the approach road half-widths are corrected, the A601 (E) arm operates over practical capacity with an RFC of 0.96 in the DS 2033 AM scenario and therefore mitigation options may need to be considered.

4. Summary

Highways England has completed a technical review of the Lancaster Local Plan Transport Assessment, prepared by WYG to consider the potential impact of proposed Local Plan growth on various junctions. This section provides a summary of key elements in this technical review:

- **Limitations of the Study** – The TA has not accounted for any of the major transport schemes identified in the Infrastructure Delivery Schedule, all of which are likely to have a major impact on operation of the highway network in Lancaster. Without account of these schemes it is difficult to draw sound judgement on the impact of the Lancaster Local Plan and associated proposals on the Strategic Road Network;
- **Traffic Growth** – The methodology for deriving forecast year traffic flows results in higher background traffic growth in the ‘without’ Local Plan scenario than in the ‘with’ Local Plan scenario. It is suggested that a truer reflection of Local Plan impacts would be to remove the equivalent level of Local Plan development from the TEMPro database in both scenarios; this approach therefore allows the direct identification of infrastructure requirements to support the planned level of housing and employment development;
- **Trip Rates and Trip Generation** – These elements appear appropriate, subject to agreement from the highway authority, Lancashire County Council;
- **Trip Assignment** – Whilst sensitivity assessments could be used to refine the adopted fixed assignment methodology, we believe that a strategic model would have provided a more robust assessment by considering alternative assignments due to congestion and the proposed major schemes;
- **Junction Modelling** – There are a number of modelling concerns across all of the models presented. In selected cases, correction of errors has identified requirements to consider further mitigation. Changes to the traffic growth methodology may also affect model results and therefore we are unable to come to a sound conclusion on the likely level of impact of the Local Plan based on the evidence provided;
- **TD22 /06 Assessments** – Whilst the adopted merge/ diverge flows appear suitable, mainline flows used in the calculations are incorrect and overestimate the mainline flow at the point of merge or diverge. Nevertheless, the overall conclusions of the merge/ diverge assessment appear to be valid;
- **Mitigation Measures** – Whilst the mitigation measures may require review following update to the junction models and traffic flows, concerns have been highlighted in relation to the mitigation options proposed for A6 Main Road/ Stoney Lane/ Salford Road (Junction 2), and Caton Road/ M6 Junction 34 (Junction 10) and A683/ M6 Junction 34 (Junction 29). We would suggest that improvement options for the A6 Main Road/ Stoney Lane/ Salford Road (Junction 2) have deliverability and operational issues that could limit the degree of improvement possible, and therefore have concerns over the scope for mitigation to accommodate future Local Plan growth at this location, where queues currently extend back a significant distance along the A6. We understand that Lancashire County Council (with the support of the City Council) are currently preparing a Housing Infrastructure Fund (HIF) bid for the reconfiguration of M6 Junction 33. We would suggest that the City Council’s option to relieve congestion at the A6 Main Road / Stoney Lane / Salford Road crossroads (Junction 2) may negatively impact upon any reconfigured motorway junction. In addition,

the A683 / M6 Junction 34 does not prevent queues extending onto the M6 mainline, and the scheme has also not been included within the Infrastructure Delivery Schedule.

Highways England

14 February 2019